

KRYUKOV, P.G., kand.med.nauk

Late complications in operations for the elimination of transverse flatfoot by the M.I.Kuslik method. Ortop., travm. i protez. 21 no.8: 67-68 Ag '60. (MIRA 13:11)

1. Iz Cherepovetskogo (Vologodskoy oblasti) gorodskogo meditsinskogo ob'yedineniya (glavnyy vrach - N.A.Belyakova).  
(FOOT—SURGERY)

KRYUKOV, P.G., kand.med.nauk

Mild form of idiopathic fragilitas ossium. Vest. rent. 1 rad. 36 no.6:  
58-60 N-D '61. (MIRA 15:2)

1. Iz Cherepovetskogo gorodskogo meditsinskogo ob'yedineniya (glavnyy  
vrach N.A.Belyakova) Vologorodskoy oblasti.  
(OSTEOPATHYROSIS)

KRYUKOV, P.G., kand.med.nauk

Stamping (marking) roentgenograms. Med.sestra 21 no.7:50-51 J1 '62.  
(MIRA 15:8)

1. Iz Cherepovetskogo gorodskogo meditsinskogo ob'yedineniya  
Vologodskoy oblasti.

(X RAYS)

BASOV, N.G.; ZUYEV, V.S.; KRYUKOV, P.G.

Increasing the power of a ruby-type quantum pulse optical maser  
by resonator Q-factor modulation. Zhur. eksp. i teor. fiz. 43  
no.1:353-355 J1 '62. (MIRA 15:9)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.  
(Masers)

L 10270-63 EWA(k)/EWT(1)/FBD/BDS/T-2/3W2/ZEC(b)-2/ES(t)-2--AFFTC/ASD/  
ESD-3/RADG/AFWL--JHB/WG/IJP(C)/E/EH  
ACCESSION NR: AP3002751 8/0120/63/000/003/0168/0189

AUTHOR: Zuyev, V. S.; Kryukov, P. G.

TITLE: Calorimeter for measuring radiation energy of an optical quantum oscillator

SOURCE: Pribery 1 tekhnika eksperimenta, no. 3, 1963, 188-189

TOPIC TAGS: optical quantum oscillators, measurements of radiation energy

ABSTRACT: Fig. 1 of Enclosure shows the schematic diagram of a calorimeter-type receiver used for measuring the radiation energy of an optical quantum oscillator. Copper-foil hollow sphere 1 with aperture 2 is placed in a vacuum. The ray is directed through the aperture into the sphere and is absorbed by the walls; temperature is measured by thermocouple 4; the sphere is blackened inside and its outer surface is coated with a thin layer of silver. The sphere is suspended by glass hooks 3, which insure thermal insulation. It is placed in glass flask 6, whose vacuum is maintained by getter 5. The emf of the thermocouple is measured with a galvanometer whose sensitivity is  $10 \text{ sup } -7 \text{ v/mm/m}$  and internal resistance is approximately 10 ohms. For a sphere of a

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L 10270-63

ACCESSION NR: AP3002751

5

mass of 0.6 g, a diameter of 20 mm, an aperture diameter of 7 mm, a foil thickness of 0.05 mm, and a thermocouple sensitivity of  $5 \times 10 \text{ sup } -4$  joule, the measurement range was  $5 \times 10 \text{ sup } -4$  to 1 joule. For a sphere of a mass of 8.7 g, a diameter of 30 mm, an aperture diameter of 3 mm, a foil thickness of 0.5 mm, and thermocouple sensitivity of  $3.5 \times 10 \text{ sup } -3$  joule, the measurement range was  $3.5 \times 10 \text{ sup } -3$  joule. In both cases, the thermocouples consisted of copper (0.05 mm) and constantan (0.08 mm) wires, and measurement accuracy was 20%. "In conclusion, the authors thank N. G. Basov, M. D. Galanin, A. M. Leontovich, and V. I. Malyashev for their useful discussions." Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Fizicheskiy institut AN SSSR (Physica Institute, AN SSSR)

SUBMITTED: 24Jul62 DATE ACQ: 12Jul63.

ENCL: 01

SUB CODE: 00

NO REF SOV: 001

OTHER: 002

Card 2/32

ACCESSION NR: AP4019968

S/0020/64/154/006/1303/1305

AUTHORS: Grasyuk, A.Z.; Zuyev, V.S.; Kokurin, Yu.L.; Kryukov, P.G.;  
Kurbasov, V.V.; Lobanov, V.F.; Mozhzherin, V.M.; Sukhanovskiy,  
A.N.; Cherny\*kh, N.S.; Chuvayev, K.K.

TITLE: Optical moon ranging

SOURCE: AN SSSR. Doklady\*, v. 154, no. 6, 1964, 1303-1305

TOPIC TAGS: laser, ruby laser, moon ranging, moon  
light reflection, celestial ranging, optical ranging

ABSTRACT: The paper describes the preliminary results of moon ranging with a ruby laser. For the transmission and reception of the light pulses, a telescope was used with a mirror diameter of 2.6 m. (see Fig. 1 of the Enclosure). The laser used was developed by V.S. Zuyev and P.M. Kryukov and had the following parameters: wavelength 6943A, pulse energy 50 to 70 joules, pulse duration 2  $\mu$ sec, diameter of the beam 11 mm., and divergence 3'. By taking into consideration the light scattering in the atmosphere, the diameter of the spot on the moon is estimated to be 14 km. For the detection of the signal,

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ACCESSION NR: AP4019968

a photomultiplier cooled with dry ice was used. The signal to noise ratio was 0.16. Therefore, statistical treatment was necessary. The authors believe that the results prove the reality of the reflected signal. "The authors are grateful to corresp. members A. G. Basov and A. B. Severnyy, and to B. I. Belov, F. Kh. Nigmatullin of the Lebedev Phys. Institute, and to V. B. Nikonov, V. K. Prokofyev P. P. Dobronravin, N. V. Steshenko, and B. P. Abrazhevskiy of the Crimean Astrophysics Observatory." Orig. art. has: 1 figure..

ASSOCIATION: Fizicheskiy institut im. P.N. Lebedeva Akademii nauk SSSR (Institute of Physics, AN SSSR), Krymskaya astrofizicheskaya observatoriya akademii nauk SSSR (Crimean Astrophysics Observatory, AN SSSR)

SUBMITTED: 05Nov63

ATD PRESS: 3047

ENCL: 01

SUB CODE: EC, AA

NO REF SOV: 001

OTHER: 001

Card 2/3



ACCESSION NR: AP4019968

ENCLOSURE: 01

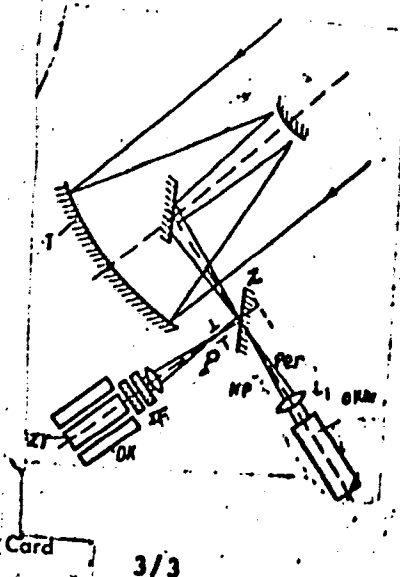


Fig. 1. Diagram of unit for optical moon ranging

T - Telescope; OKG - optical quantized generator; L<sub>1</sub> - matching lens; Z - throwover mirror; D - diaphragm; IF - interference filter; FZY - electron photomultiplier; OK - dry ice container,

AMBARTSUMYAN, R.V.; BASOV, N.G.; YELISEYEV, P.G.; ZUYEV, V.S.; KRYUKOV,  
P.G.; STOYLOV, Yu.Yu.

Measurement of the time parameters of a large laser using a  
photodiode. Radiotekh. i elektron. 10 no.9:1729-1730 S '65.  
(MIRA 18:9)

4-kv, 300- $\mu$ f power supply and produced a 100- $\mu$ sec pulse.  
It was energized by a 0.5- $\mu$ sec pulse. These rise time was

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APPROVED FOR RELEASE: 04/03/2001

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L 59527-65 EWA(k)/FBD/ENG(r)/EWT(1)/EEC(k)-2/EIF(n)-2/ENG(m)/EPA(w)-2/T/EEC(b)-2/  
 EWP(k)/EWA(m)-2/EIA(h) Pm-4/Pn-4/Pz-6/Pe-4/Pf-4/Peb/Pi-4/Pl-4 SCTB/IJF(c) HG/HW/AT  
 UR/0056/63/048/006/1583/1587 90  
 89  
 6  
 ACCESSION NR: AP5016549

AUTHOR: Amabartsunyan, R. V.; Boyko, V. A.; Zuyev, Y. B.; Basov, N. G.; Krokhin,  
O. N.; Kryukov, P. G.; Senatskiy, Yu. V.; Stoylov, Yu. Yu.

TITLE: Heating of matter by focused laser radiation

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 48, no. 6, 1963,  
 1583-1587

TOPIC TAGS: high temperature plasma, laser application, laser radiation, lithium,  
 air

ABSTRACT: In discussing the main factors that limit the heating of matter to high temperatures by laser radiation, the authors point out that in solids the limitations are imposed by the sharp focus that obtains under most experimental conditions, and that in gases the limitation is imposed by the possibility of gas breakdown. In view of these limitations, they conclude, after analyzing the motion of the breakdown boundary in a gas qualitatively, that focusing of laser radiation on the surface of a condensed medium located in vacuum is the most promising method of obtaining a high temperature plasma. In this case the most convenient mode of

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ACCESSION NR: AP3016549

operation is one in which one-dimensional motion of plasma occurs, since three-dimensional motion leads to rapid reduction in density and a decrease in the relative fraction of the laser radiation absorbed in the plasma. Under these conditions the maximum achievable temperature is determined by the energy loss due to radiation and thermal conductivity. The authors then report the results of a spectral analysis of the emission from a plasma produced by focusing the radiation from a neodymium glass Q-switched laser on the surface of a solid sample of lithium in vacuum. The laser radiation consisted of two pulses, each with energy approximately 3J and each approximately 40 nsec in length. The estimated obtained temperature in this case is of the order of 20 eV ( $2.3 \times 10^5$  deg). In the case of breakdown produced in air of normal density by a ruby laser pulse of approximately 3J the corresponding temperature cannot exceed 10.5 eV. Orig. art. has: 3 figures and 3 formulas. (02)

ASSOCIATION: Fizicheskii institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute, Academy of Sciences, SSSR)

SUBMITTED: 16Jan65

ENCL: 00

SUB CODE: EC, WE

NO REF SOV: 009

OTHER: 003

ATD PRESS: 4053

llc  
Cord 2/2

I. 4968-66 EWA(k)/RWD/TWT(1)/EWP(e)/EWT(m)/EEG(k)-2/EWP(1)/T/EWP(k)/EWA(h)/EWA(n)-2  
ACC NR: AP5027834 SGTB/IJP(c) WG/WH SOURCE CODE: UR/0020/65/165/001/0058/0060

AUTHOR: Basov, N. G. (Corresponding member AN SSSR); Ambartsunyan, R. V.; Zuyev, V. S.;  
V. S.; Kryukov, P. G.; Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy  
institut, Akademiya nauk SSSR)

TITLE: Velocity of propagation of a powerful light pulse in a medium with population  
inversion

SOURCE: AN SSSR. Doklady, v. 165, no. 1, 1965, 58-60

TOPIC TAGS: laser, ruby laser, laser pumping, optic pumping

ABSTRACT: The article is a brief advance report of a comprehensive work to be published separately. It was shown that the leading edge of such a pulse does not change materially while propagating within a medium with inverse population. In the case of a ruby medium with usual parameters, the velocity of the pulse maximum on reaching its stationary value was shown to be  $17 \times 10^{10}$  cm/sec, which greatly exceeds the velocity of light. This fact, however, does not contradict the causality principle, since such a propagation takes place as the result of the deformation of the initially weak leading edge, and can continue only to the point of zero intensity which always propagates with the velocity of light in the medium. An amplifier composed of two ruby rods 24 cm long was used for experimental study of the problem. The end faces

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UDC: 621.375.9

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ACC NR: AP5027834

of the rods were cut at the Brewster angle. The total gain for a weak signal was about 50. Both input and output pulses were recorded by the same coaxial photocell arrangements, but the output pulse was made to travel an additional distance so that it reached the photocell  $56 \times 10^{-9}$  sec after the input pulse. The parameters of the input pulse were as follows: energy 1.3 J, pulse width  $16 \times 10^{-9}$  sec. A comparison of oscillograms of weak and strong pulses revealed that no appreciable shortening of the pulse occurred, and that only the time interval between the input and output pulse shortened as the pulse strength increased. The shift in the time interval in this case was  $9 \times 10^{-9}$  sec, which agrees with the theoretical considerations presented above. It follows that amplification of the exponentially growing leading edge of the pulse results not in a shorter pulse, but in an additional shift of the pulse peak. To shorten the pulse, it is necessary to increase the steepness of the leading edge by, say, cutting it off by a shutter, by nonlinear absorption, etc. It is noted further that the shift of the pulse peak with velocity exceeding the velocity of light is accompanied by the shift of the boundary of inverse population and can lead to the emergence of a number of new effects such as that of Cherenkov radiation. Orig. art. has: 1 figure and 2 formulas.

[FP]

SUB CODE: EC, OP/ SUBM DATE: 31Jul65/ ORIG REF: 002/ OTH REF: 002/ ATD PRESS:

4138

Card 2/2



L 1379-66 EWA(k)/FBD/EWT(1)/EEG(k)-2/T/EWP(k)/EWA(m)-2/EWA(h) SCTB/IJP(c)  
 ACCESSION NR: AP5022443 WG

UR/0109/65/010/009/1729/1730  
 621.378.325.001.5:621.383.52

AUTHOR: <sup>44</sup>Ambartsumyan, R. V.; <sup>44</sup>Basov, N. G.; <sup>44</sup>Yeliseyev, P. D.; <sup>44</sup>Zuhev, V. S. <sup>44</sup>62 B

<sup>44</sup>TITLE: The measurement of the time parameters of a giant pulse laser by means of a photodiode

SOURCE: Radiotekhnika i elektronika, v. 10, no. 9, 1965, 1729-1730 <sup>25, 44</sup>

TOPIC TAGS: giant pulse laser, gallium arsenide, photodiode, resolving time, Kerr cell, photomultiplier

ABSTRACT: The time-dependent characteristics of a giant pulse laser switched by a Kerr cell were measured by means of a gallium arsenide photodiode. The photodiode was obtained by diffusion of cadmium into n-type GaAs with a  $2 \times 10^{18} \text{ cm}^{-3}$  concentration of tellurium during a period of 60 hr. The depth, thickness, and area of the p-n junction were 80  $\mu$ , 0.9  $\mu$ , and  $2.5 \times 10^{-3} \text{ cm}^2$ , respectively. The photodiode was pumped at right angles by a nonfocused laser beam and the pulse width from the photodiode (connected across a 75-ohm load) was 40 nanosec at room temperature, and 20 nanosec at 77K. The results indicate that the resolving time of the

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ACCESSION NR: AP5022443

photodiode is not greater than 5 nanosec, a quality which makes it competitive with photomultipliers. Unlike photomultipliers, which introduce a signal time lag, photodiodes are capable of accurately determining the time lag of a laser pulse released by the Kerr cell. The experimental value of the lag was 80 nanosec. Orig. art. has: 2 figures. [YK]

ASSOCIATION: none

SUBMITTED: 09Dec64

ENCL: 00

SUB CODE: EC

NO REF SOV: 001

OTHER: 001

ATD PRESS: 4082

Card 2/2

L 21840-66 EEC(k)-2/EWA(h)/ENP(k)/EWT(1)/FBD/T IJP(c) W3

ACC NR: AP6004913

SOURCE CODE: UR/0056/66/050/001/0023/0034-

AUTHOR: Basov, N. G., Ambartsumyan, R. V., Zuyev, V. S., Kryukov, P. G., Lotokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR  
(Fizicheskii Institut Akademii nauk SSSR)

TITLE: Nonlinear amplification of a light pulse 51  
B

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 50, no. 1, 1966,  
23-34

TOPIC TAGS: laser, nonlinear optics, stimulated emission, quantum amplifier

ABSTRACT: A theoretical and experimental analysis is made of the passage of a powerful light pulse from a laser through a laser amplifier consisting of two ruby rods operating in a saturation regime. The preliminary experimental results have already been reported (Akademiya nauk SSSR. Doklady, v. 165, no. 1, 1965, p. 58-60 (see ATD Press, v. 4, no. 138, p. 7-8)). In the experiments performed, it was shown that as the result of nonlinear amplification the velocity of the pulse is 6—9 times greater than the velocity of light in vacuum. To decrease the pulse duration during nonlinear amplification, the slope of the incident pulse should be

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L 21840-66

ACC NR: AP6004913

increased by chopping off the exponential leading edge of the pulse. By using a second Kerr cell, the duration of the pulse was shortened from  $8.7 \pm 0.5$  nsec to  $4.7 \pm 0.5$  nsec and the time from  $3.7 \pm 0.5$  nsec to  $1.9 \pm 0.5$  nsec. The theoretical analysis of nonlinear amplification predicts both of the observed effects. [CS]

Orig. art. has: 19 formulas and 8 figures.

SUB CODE: 20/ SUBM DATE: 31Jul65/ ORIG REF: 011/ OTH REF: 008

Card 2/2 nst

1 21583-66 EPP/PWT(1)/EPC(k)-2/T/PWT(k)/EWA(h) IJD(c) TL

ACC NR: AP6008754

SOURCE CODE: UR/0386/66/003/006/0261/0264

AUTHOR: Ambartsunyan, R. V.; Basov, N. G.; Kryukov, P. G.; Letokhov, V. S. 4/2

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskii institut Akademii nauk SSSR) 13

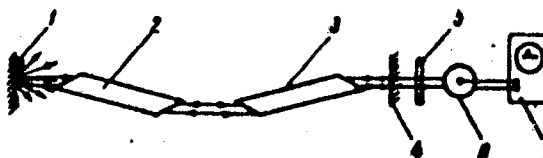
TITLE: Laser with nonresonant feedback

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 6, 1966, 261-264

TOPIC TAGS: laser r and d, ruby laser, laser beam, light scattering, laser optics

ABSTRACT: The authors report achievement of laser action with nonresonant feedback, produced by back-scattering from a volume or a surface, which behaves like a "stochastic" resonator with a continuous natural-frequency spectrum. The lasing frequency does not depend on the length of the resonator, but is determined by the resonant frequency of the active medium. In this laser (Fig. 1) the active medium comprised two

Fig. 1. Diagram of experiment. 1 - Scatterer, 2,3 - ruby crystal, 4 - mirror, 5 - filter, 6 - photocell, 7 - oscilloscope.



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L 21553-66

ACC NR: AP6008754

ruby crystals in series, each 24 cm long and 1.8 cm in diameter. The feedback was produced with the aid of a mirror (reflection 99%) and a volume scatterer (suspension of chalk particles in water) or surface scatterer (plate with a layer of sputtered MgO). The light was recorded with a photocell and oscilloscope, and its spectrum was measured with a Fabry-Perot interferometer. The gain of a weak signal in one passage through the two crystals reached 900. The condition of self excitation of the laser is described. The lasing threshold is found to be practically independent of the angle of inclination of the scatterer, over a wide range, but increases with increasing distance between the scatterer and the crystal. The radiation line width was smaller than  $0.015 \text{ cm}^{-1}$  and was determined by the resolution of the interferometer (the spontaneous emission line width of ruby is  $15 \text{ cm}^{-1}$ ). An investigation of the beat radiation spectrum has shown that there are no frequencies characteristic of lasers with resonant feedback. The angle spread of the beam was proportional to the ratio of the crystal diameter to the average distance between the mirror and the scatterer. The distribution of the radiation field in the far zone was quite homogeneous. A pulse with duration 200 nsec was obtained in the case of Q-switching of the stochastic resonator. The average frequency of the generated radiation in the laser with nonresonant feedback was determined by the position of the center of the atomic transition, and not by the resonance of the feedback. It is consequently possible to produce an optical frequency standard on the basis of a laser with nonresonant feedback, using high-gain atomic transitions in a gas discharge (Ne, Xe, etc.) operating in the continuous mode, and also scatterers with narrow back-scattering directivity pattern.

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553-66  
ACC NR: AP6008754

It is noted that generation with feedback due to scattering by inhomogeneities of the crystal and by the matte side surface of the crystal can limit the maximum gain.  
Orig. art. has: 2 figures.

[02]

SUB CODE: 20/ SUBM DATE: 09Feb66/ ORIG REF: 002/ OTH REF: 003/ ATD PRESS:

4219

Card 3/3 UCR

L 44793-66 EWT(1)/EWP(e)/EWT(m)/EEC(k)-2/T/EWP(k) IJP(c) WG/WH

ACC NR: AP6031433

SOURCE CODE: UR/0056/66/051/002/0406/0411

AUTHOR: Ambartsunyan, R. V.; Basov, N. G.; Zuyev, V. S.; Kryukov, P. G.;  
Letokhov, V. S.; Shatberashvili, O. B.

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8

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy  
institut Akademii nauk SSSR)

TITLE: The structure of a giant pulse of a Q-switched laser

SOURCE: Zh. eksper i teor fiz, v. 51, no. 2, 1966, 406-411

TOPIC TAGS: solid state laser, ruby laser, giant pulse laser, Q switched laser,  
laser output

ABSTRACT: The spatial and temporal development of a giant pulse of a Q-switched ruby laser in a transverse direction and the effects of the cavity on it were investigated experimentally by means of the setup shown in Fig. 1. A ruby rod 9 mm in diameter and 120 mm long with dull lateral surfaces was placed in a reflector with a helical IFK-15000 flashlamp. For an 8-kj pump the gain per pass was approximately 12. A 1.5-j single laser pulse was generated with a duration of 10-15 nanosec. Q-switching was done by means of a Kerr cell or a vanadium phthalocyanin solution. The exponential results indicate that generation commences in the center of the crystal and spreads transversely over the entire crystal in 3-10 nanosec, i.e., in a time comparable to the duration of the integral pulse. The spatial development of generation

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L 44293-66

ACC NR: AP6031433

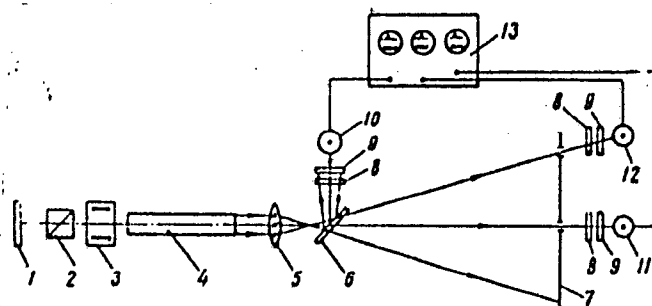


Fig. 1. The experimental setup

- 1 - Mirror 99% reflective; 2 - polarizer; 3 - Kerr cell; 4 - ruby crystal;
- 5 - lens; 6 - semitransparent plate;
- 7 - screen with diaphragms; 8 - interference filter; 9 - dull glass;
- 10-12 - coaxial photocells;
- 13 - multibeam oscillograph.

depends essentially on the density distribution of population inversion in the crystal and on its refractive index. The experimental data agree fully with theoretical data presented elsewhere (V. S. Letokhov and A. P. Suchkov, ZhETP, 50, 1966, 1148). The authors propose further experiments on the measurement of nonuniformity of the complex permittivity at the instant of Q-switching and generalization of the theory for the case of a nonuniform refractive index. Orig. art. has: 7 figures. [YK]

SUB CODE: 20/ SUBM DATE: 06Mar66/ ORIG REF: 007/ OTH REF: 006/ ATD PRESS: 5080

Card 2/2 blg

ACC NR: AP603246

SOURCE CODE: UR/0056/66/051/003/0724/0729

AUTHOR: Ambartsunyan, R. V.; Basov, N. G.; Kryukov, P. G.; Letokhov, V. S.

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences, SSSR (Fizicheskiy institut Akademii nauk SSSR)

TITLE: Laser with a nonresonant feedback

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 3, 1966, 724-729

TOPIC TAGS: solid state laser, ruby laser, nonresonant feedback, ~~laser~~, laser r and d

ABSTRACT: A description is given of a pulsed laser with a nonresonant feedback achieved by back scattering of radiation (See also FSB, v. 2, no. 5, 1966, 1-6). The arrangement used in the experiments is shown in Fig. 1. The active medium

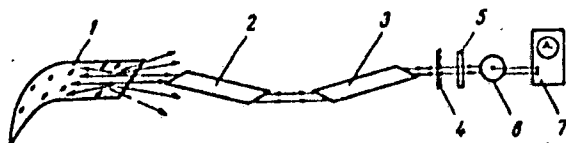


Fig. 1. Experimental arrangement

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L 47575-56

ACC NR: AP6032467

consists of two <sup>15</sup>ruby rods, 2 and 3, each 24 cm long and 1.8 cm in diameter with the ends cut at the Brewster angle. The feedback is achieved by means of mirror 4 (70% reflective) and a volume or surface scatterer 1. The volume scatterer consists of sulfur hydrosol particles with diameters not less than the laser wavelength which are placed in a 15-cm-long cell with Brewster angle windows. The surface scatterer is a layer of magnesium oxide sputtered onto an aluminum plate. The rest of the experimental setup consists of a filter 5, a photocell 6, and an oscillograph or Fabry-Perot interferometer 7. Experiments indicate that varying the inclination angle of the scatterer between 0 and 60° has virtually no effect on the oscillation threshold, which was observed to increase with distance between the scatterer and the crystal. The spatial coherence length of the nonresonant feedback laser does not exceed 0.25 mm. The laser emission is highly monochromatic and the frequency of radiation is independent of the cavity dimensions. The line narrowing (to 0.005 cm<sup>-1</sup>) above the threshold for laser action depends on the resonant properties of the active medium. This property makes such a laser a reliable optical frequency standard. For this purpose it is preferable to use mixtures of gases such as Xe, Ne-He, etc., as active media to provide a high gain per pass and a cw operation. Orig. art. has; 1 figure and 4 formulas. [YK]

SUB CODE: 20/ SUM DATE: 21Mar66/ ORIG REF: 003/ OTH REF: 005/ ATD PRESS: 5093

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2/2

1. 00012-57 EMT(1)/EMT(a)/EMT( $\pi$ )/EMT(1) IJF(c) WG/WJ/GG/RE/WH  
ACC NR: AP6023635

SOURCE CODE: UR/0386/66/004/001/0019/0022

AUTHOR: Ambartsumyan, R. V.; Basov, N. G.; Zuyev, V. S.; Kryukov, P. G.; Letokhov, <sup>do</sup>  
V. S. <sub>B</sub>

ORG: Physics Institute im. P. N. Lebedev, Academy of Sciences SSSR (Fizicheskii in-  
stitut Akademii nauk SSSR)

TITLE: Propagation of a light pulse in a nonlinearly amplifying and absorbing medium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu.  
Prilozheniye, v. 4, no. 1, 1966, 19-22

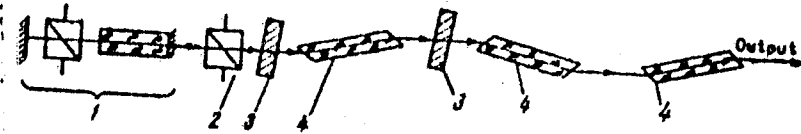
TOPIC TAGS: coherent light, light pulse, laser beam, laser r and d, pulse shape, ruby  
optic material

ABSTRACT: This is a continuation of earlier work by the authors (ZhETF v. 50, 23,  
1966), where propagation of coherent light in a medium with nonlinear gain was investi-  
gated and the possible shortening of light pulses in such a medium predicted. The  
present letter reports on successful experiments in this direction, showing that to  
obtain compression of a propagating light pulse it is necessary to eliminate the trans-  
verse structure that is produced in the light pulse when the latter is produced, for  
example, by a Q-switched laser. In the test setup (Fig. 1) the amplifying component  
consisted of three ruby crystals and the absorbing component was two cuvettes filled  
with a solution of vanadium phthalocyanine in toluene. In the initial experiments the  
pulse compression could not be realized because of the transverse structure resulting

Card 1/2

1 00574-67  
ACC NR: AP6023635

Fig. 1. Diagram of experiment. 1 - Laser, 2 - Kerr shutter, 3 - cuvette, 4 - ruby crystal



from the fact that the development of pulse generation in the peripheral parts of the crystal is delayed by a time of the order of the pulse duration. Success was attained when this structure was eliminated by means of a second Kerr shutter that cut off the leading front of the generator pulse. The pulse width was reduced from about 11 nsec (at 0.5 J energy) past the Kerr shutter and the first absorbing cuvette to 5.7 nsec (10 J) past the second amplifying crystal, and 2 nsec (15 J) past the third. A light output of 7 - 8 GW (3 GW/cm<sup>2</sup>) was attained. The pulse power is much higher than the power causing damage in ruby crystals at 10<sup>-8</sup> sec duration (1 GW/cm<sup>2</sup>). Although damage to the crystal is hindered by the short duration of the pulse, it does not prevent generation of powerful light pulses shorter than 10<sup>-9</sup> sec. It is concluded that extremely short light pulses are obtainable with two-component media in which the absorbing component has a saturation energy much lower and a homogeneous line width much larger than the amplifying medium. Orig. art. has: 2 figures.

[02]

SUB CODE: 20/ SUBM DATE: 03May66/ ORIG REF: 003/ OTH REF: 001/ ATD PRESS: 5037

Cord 2/2 vir

ACC NR: AP7003209

SOURCE CODE: UR/0056/66/051/006/1669/1675

AUTHOR: Ambartsumyan, R.V.; Kryukov, P.G.; Letokhov, V.S.

ORG: Physics Institute im. P.N. Lebedev, Academy of Sciences SSSR  
(Fizicheskii institut Akademii nauk SSSR)

TITLE: Dynamics of spectral line narrowing in a nonresonant feedback laser

SOURCE: Zh eksper i teor fiz, v. 51, no. 6, 1966, 1669-1675

TOPIC TAGS: solid state laser, ruby laser, nonresonant feedback laser,  
laser output emission

ABSTRACT: The authors proceed from rate equations for the spectral density of the photons and for the density of the active particles. The time-dependent line width  $\Delta\nu$ , is expressed in terms of exact solutions through numerical integration, and also in terms of a simplified formula which shows that  $\Delta\nu$ ; after an initial transient-state period, grows roughly as  $k/\sqrt{E}$  ( $k$ —threshold gain per pass), i.e., much more slowly than in lasers with resonant feedback. The experimental part of the paper deals with the

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UDC: none

ACC NR: AP7003209

spectral analysis of the emission of a nonresonant feedback ruby laser by the method of the Fabry-Perot interferometer and the rotating-mirror spectrograph. The parameters of this laser were described earlier (Ambartsumyan, R. V., N. G. Basov, P. G. Kryukov, V. S. Letokhov. ZhETF, PVR, 3, 1966, 262; ZhETF, v. 51, no. 2, 1966, 724). The observed values of the spectral width are shown to confirm the theory. White paper and magnesium oxide were used as surface scatterers, and smoke and sulfur hydrosols were used as volume scatterers. With smoke the threshold gain per pass  $k$  was naturally very high, and narrowing (to  $0.03 \text{ cm}^{-1}$ ) occurred quite rapidly (in 100–300  $\mu\text{sec}$ ). :x]

SUB CODE: 20/ SUBM DATE: 19Jul66/ ORIG REF: 005/ OTH REF: 005  
ATD PRESS: 5113

Cord 2/2

L 44176-66 FVP(m)/LWP(t)/ETI/EMI(k) TJF(c) JD

ACC NR: AP6011277 SOURCE CODE: UR/0413/66/000/006/0137/0137

INVENTOR: Kryukov, P. I. ; Chugunkov, V. I.

ORG: none

TITLE: Method of grinding and polishing of curvilinear sections. Class 67,  
No. 180108

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 6, 1966, .  
137

TOPIC TAGS: grinding, metal polishing, jet vane

ABSTRACT: This Author Certificate introduces a method for grinding and polishing jet vane sections using a grinding belt and the short-huecontact method. To eliminate profile unevenness caused by moving of bases, residual and elastic deformations occurring during the treatment process, the part being worked on is given an additional degree of freedom. It rests on a supporting roll with a premachined surface. [LD]

SUB CODE: 13/ SUBM DATE: 01Jul63/

Card 1/1 *alluv*

UDC: 621.923.1:621.924.24



SCHULZ, M.M., professor, doktor; KRYUKOV, P.I., inzhener [translator];  
KIVENKO, S.F., redaktor; AKIMOVA, L.D., redaktor; YAROV, N.M.,  
tekhnicheskiiy redaktor

[Milk that keeps well. Translated from the German] Stoikoe moloko.  
Perevod s nemetskogo P.I.Krjukova, Pod red. S.F.Kivenko. Moskva,  
Pishchepromizdat, 1956. 106 p. (MLBA 10:1)  
(Milk)

AZBEL', S.M.; ZAIKIN, M.I.; KRYUKOV, P.I.; SAVIN, I.M.; NOVIKOV,  
V.F., inzh., retsenzent; KHARLAMOV, P.G., inzh., red.;  
VOROTNIKOVA, L.F., tekhn. red.

[Repair of failures of the ChME2 diesel locomotive] Ustranenie  
neispravnostei teplovoza ChME2. Moskva, Transzheldorizdat,  
1963. 53 p. (MIRA 16:5)  
(Diesel locomotives--Maintenance and repair)

KRYUKOV, Petr Sergeyevich; VADEYEV, O., red.; DANILINA, A., tekhn.red.

[This must not happen; against imperialist plans for an atomic war] Eto ne dolzhno proisloiti; protiv imperialisticheskikh planov podgotovki atomnoi voyny. Moskva, Gos.izd-vo polit.lit-ry, 1959. 46 p. (MIRA 12:5)  
(Atomic weapons--International control)

ZRYUKOV, R., inzh.

Apartment house built of prefabricated room-blocks. Na stroi.  
Mosk. 1 no.9:11-14 S '58. (MIRA 11:12)  
(Moscow--Apartment houses) (Precast concrete construction)

KRYUKOV, R. V., Cand Tech Sci -- (diss) "Basic problems in the technology of manufacturing in an upright position thin-walled safety frameworks for apartment houses." Moscow, 1960. 18 pp; (Moscow Higher and Secondary Specialist Education RSFSR, Moscow Order of Labor Red Banner Construction Engineering Inst im V. V. Kuybyshev); 160 copies; price not given; (KL, 29-60, 125)

SARAPIN, Iosif Godelevich, kand. tekhn. nauk; ~~KRYUKOV, R.V.~~, kand.  
tekhn. nauk, nauchnyy red.; YEMEL'YANOVA, M.D., red.izd-  
va; GOL'BERG, T.M., tekhn. red.

[Manufacturing keramsit-concrete wall panels for completely  
prefabricated apartment houses] Proizvodstvo keramsitobeton-  
nykh stenovykh panelei dlia polnosbornogo domostroeniia.  
Moskva, Gosstroizdat, 1963. 134 p. (MIRA 16:8)  
(Walls)

KIPSIANOVA, M.K., kand. tekhn. nauk; KRYUKOV, R.V., kand. tekhn. nauk;  
PEYSIKOV, V.A., inzh.

Mobile shield method for molding large panels. Stroi. i dor.  
mash. 9 no.1:24-28 Ja '64. (MIRA 18:7)

KRYUKOV, S. I. Cand Tech Sci -- (diss) "Selective dimerization of propylene,  
and syntheses based upon it." Yaroslavl', 1957. 12 pp incl cover (Min of Higher  
Education USSR. Yaroslavl' Technological Inst). 125 copies (XL. 3-53. 97)

-24-



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APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920002-2"

**AUTHORS:** Farberov, M. I., Machtina, K. A., Kryukov, S.I., 20-114-4-35/63

**TITLE:** Two Methods for a Commercial Scale Production of Methylpentadiene (Dva metoda tekhnicheskogo sinteza metilpentadiyena)

**PERIODICAL:** Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 807-810 (USSR)

**ABSTRACT:** Hitherto methylpentadiene is a commercially little accessible diene. The only method of some technical value was proposed by American authors and produces methylpentadiene from acetone. Because of the properties of its polymers and co-polymers methylpentadiene is of a certain interest. The present paper describes two methods of its technical synthesis. 1.) The authors thoroughly investigated the interaction reactions of olefines with aldehydes. Thus the chief reaction product from the interaction of isobutylene and acetaldehyde in the presence of 1-2% sulphuric acid is 2,4,4,6-tetramethyldioxane-1,3 (denoted TMD/I/ in the following; 90% yield of the aldehyde reacted through). Published works report that the alkylidioxanes-1,3 may be serve as initial substances for the dienesynthesis. The authors' experiments proved that by the passage of TMD with vapor over a ca-

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Two Methods for a Commercial Scale Production of Methyl-  
pentadiene

20 111-4-33/63

talyst, metapentadiene with a 75% mol. yield of the decomposed TMD/I/ is obtained. On this occasion two isomeric dienes develop: 2-methylpentadiene-1,3/II/ and 4-methylpentadiene-1,3/III/. Their physical properties are very similar. Their quantitative determination in the mixture is based upon their different behaviour towards maleic anhydride: II gives an adduct, III a co-polymer. In the presence of inhibitors the polymerization inclination of III may be suppressed, so that it can be separated from II. II and III were obtained in the proportion 45:55. Beside methylpentadiene a small amount (5%) of a mixture of two isomeric methylene pentanols (IV and V) results from contact cracking. There occurs also a cracking reaction of I, giving the original substances: acetaldehyde and isobutylene. A diagram of contact cracking of TMD/I/ in time is given in the paper. The water apparently participates in the reaction and favours the hydrolysis of I into an intermediate diol on the surface of the catalyst. In the moment of its formation VI dehydration under liberation of one or two water molecules and under according formation of a mixture of two isomeric methylpentanols IV,V or dienes II,III. 2) The second technical method of methylpentadiene synthesis is the dehydration of the

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Two Methods for a Commercial Scale Production of Methyl-  
pentadiene

20-114-4-35/63

propylene-dimer: 2-methylpentene-1/VII/. The experiments with catalytic dehydration of VII show that methylpentadiene can be produced in this manner. Here, too a mixture of the isomers II and III is obtained in about the same amounts and with a yield of 35-38% of the VII sent through and 70-75% of the VII decomposed. There are 2 figures, 2 tables, and 11 references, 4 of which are Soviet.

ASSOCIATION: Yaroslavl' Technological Institute (Yaroslavskiy tekhnologicheskii institut)

PRESENTED: January 15, 1957 by I. N. Nazarov, Member, Academy of Sciences, USSR

SUBMITTED: November 14, 1956

Card 3/3

AUTHORS: Kryukov, S. I., Kut'in, A. M., Levskaya, G. S., 153-58-1-13/29  
Tepenitsyna, Ye. P., Ustavshchikova, Z. F., Farberov, M. I.

TITLE: An Improved Method of the Synthesis of Triethyl-Aluminum  
(Uluchshennyi sposob sinteza trietilalyuminiya)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,  
Khimiya i khimicheskaya tekhnologiya, 1958, Nr 1,  
pp. 86-93 (USSR)

ABSTRACT: The authors give a survey on the publications of trialkyl-  
aluminum as specific catalyst, both alone, as well as with  
cocatalysts for olefinic polymerization (references 1 to 3),  
and they compare with each other the known methods of  
production of aluminum-organic compounds (references 4 to 6).  
The authors selected the method by Grosse and Meviti  
(Mavity, ref. 5) as the most convenient one. A)- Production  
of ethylaluminum sesquichloride (mixture of ethylaluminum-  
-dichloride and diethyl-aluminum-chloride). The first stage  
of the process according to reference 5 proved to be rather  
incomplete. It is difficult to be controlled, has a long  
period of induction and often leads to the complete  
destruction of the products, sometimes with explosion. The

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## An Improved Method of the Synthesis of Triethyl-Aluminum

153-58-1-13/29

authors tried various initiators at atmospheric pressure (crystalline iodine, ethylaluminum-sesquichloride, ethylbromide and a mixture of these substances). Table 1 shows the influence of individual initiators on the period of reaction. Ethylbromide acted most efficiently. Table 2 shows the influence of the initial temperature with the supply of ethylchloride on the reaction-period. Optimum conditions for the carrying out of the process were selected from the obtained test results. Further tests were carried out on an enlarged plant (figure 1). The laboratory results were confirmed: It was possible to reduce the reaction-period to from 2 to 3 hours. B)- Reaction of symmetrization of ethylaluminum-sesquichloride. In order to obtain triethylaluminum, the above reaction must be carried out with the participation of metallic sodium. According to reference 5, various insufficiencies exercised a disturbing effect in this connection. The authors found the conditions for removing them: 1)- Sodium ought to be used in fine dispersion, the surplus of Na must not exceed 5 to 10% of the theoretically required quantity. 2) - Sesquichloride must be introduced in portions as a 20 to 30% solution in hydrocarbons. 3) - The temperature of reaction must not

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## An Improved Method of the Synthesis of Triethyl-Aluminum 153-58-1-13/29

exceed  $130^{\circ}$  and an intense agitation should be guaranteed. The gasoline-fraction "galosha" (boiling above  $100^{\circ}$ ) proved most effective among several tested solvents. The yield of triethylaluminum amounted to 70 to 76% of the charged sesquichloride under the selected optimal conditions. A certain quantity of partly oxidized triethylaluminum was proved in the produced triethylaluminum. The inactive part of the catalyst formed a mixture of all 3 possible ethoxy-compounds. An experimental part follows. C) - Production of aluminum sesquichloride. According to the method described here, a 99% yield of that theoretically possible was obtained. The two (paragraph A) components were present in the mixture in approximately equimolar quantities. D) - The reaction of symmetrization was carried out in a device shown in figure 3. A filter required for this purpose is shown in figure 4. There are 4 figures, 2 tables, and 12 references, 3 of which are Soviet.

ASSOCIATION: Yaroslavskiy tekhnologicheskii institut i opytnyy zavod  
Card 3/4 Ministerstva khimicheskoy promyshlennosti. Kafedra

An Improved Method of the Synthesis of Triethyl-Aluminum 153-58-1-13/29

tekhnologii osnovnogo organicheskogo sinteza i SK  
(Yaroslavl Technological Institute and  
the Experimental Plant of the Ministry for Chemical Industry.  
Chair for the Technology of General Organic Synthesis  
and SK)

SUBMITTED: September 23, 1957

Card 4/4

S/081/60/000/007/005/012  
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 7, p. 189, # 26523

AUTHORS: Kryukov, S. I., Farberov, M. I.

TITLE: Methylpentadiene <sup>1</sup> Synthesis on Propylene Base

PERIODICAL: Uch. zap. Yaroslavl. tekhnol. in-ta, 1959, No. 3, pp. 21-33

TEXT: 2-methylpentene-1 (I) is easily obtained by dimerization of propylene according to Tsigler; it is dehydrated into methylpentadiene (II) in the presence of a K-16 catalyzer (prepared on the base of metal oxides and additionally heated for 1.5 hours at 830°C). Under optimum conditions (500°C volumetric rate 0.6 l per 1 l of the catalyzer per 1 hour; molar dilution by vapor 1 : 12) the following substances and the yield percentage per decomposed I, were obtained: II, 71.8; isoprene, 3.4; isobutylene, 6.4; propylene, 2.3; higher hydrocarbons, 2.6. Changes in the temperature conditions of the reaction reduced sharply the yield of II. K<sub>12</sub> and K<sub>18</sub> catalyzers yielded less satisfactory results; changes in the volumetric rate had only a slight effect on the

Card 1/2

Methylpentadiene Synthesis on Propylene Base

S/081/60/000/007/005/012  
A006/001

yield of II; a greater effect was exerted by changes in the amount of diluent vapor. Thermodynamical calculations of the reaction are given.

L. Shchukina ✓

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

S/081/50/000/017/013/016  
A006/A001

Translation from: Referativnyy zhurnal, Khimiya, 1960, No. 17, p. 372, # 70452

AUTHORS: Kryukov, S.I., Kut'yin, A.M., Levskaya, O.S., Tepenitsyna, Ye.P.,  
Ustavshchikova, Z.F., Farberov, M.I.

TITLE: Technical Mode of Triethylaluminum Synthesis

PERIODICAL: Uch. zap. Yaroslavsk. tekhnol. in-ta, 1959, Vol. 3, pp. 5-17

TEXT: The authors developed a technical mode of preparing ethylaluminum-sesquibromide (I) with a yield of about 100% on the basis of a method described (Grise, A.U., Maritz, J.M., Organ. Chem., 1940, No. 5, p. 196) which consists in the interaction of  $C_2H_5Cl$  (II) and Al in the presence of 5-10%  $C_2H_5Br$  (III) with relation to Al.  $I_2$ , (I) and their mixtures were tested as initiators yielding unsatisfactory results. It is assumed that the process is initiated by immediately forming ethylaluminumsesquibromide, in the case that III is used. I is transformed into  $(C_2H_5)_3Al$  (IV) by processing with dispersed Na metal in organic solvents (benzine-rubber, refined kerosene, xylene, isooctane). Na is taken in excess of 5-15%, I is introduced into the reaction by portions in the form of

Cont 1/2

Technical Note of Triethylaluminum Synthesis

S/081/60/000/017/013/016  
A006/A001

20-30% solution in hydrocarbon, the yield of IV is 70-76% in relation to I, and 70% in relation to II or Al. All the experiments are carried out in dry  $N_2$  atmosphere, free of  $O_2$ . Amounts of 40 g Al and 24 g III are heated, while stirring, at 50°C and 160 g (110%) II is added by portions of 10 ml; the reaction lasts 8 hours. I is obtained in the form of a colorless or slightly colored liquid, the yield is 99%, boiling temperature 117-122°C/50 mm. In 100 g of the solvent 29 g Na is heated at 100°C, into the hot dispersion 91.4 g I is added during 20 min in the form of a 30% solution in benzine-rubber (boiling temperature 100-115°C), mixed for 30 minutes at 105-110°C and filtrated; the precipitate is washed with 250 ml of solvent; IV is obtained in the form of a colorless liquid, self-sublimating in air, the yield is 32.5 g, the boiling temperature 100-107°C/10 mm, d 0.872. The authors present two tables and schematic diagrams of metallic apparatus and laboratory equipment including descriptions.

S. Davydova

Translator's note. This is the full translation of the original Russian abstract.

Card 2/2

S/080/62/035/010/008/012  
D204/D307

AUTHORS: Kryukov, S.I. and Farberov, M.I.  
TITLE: Some syntheses based on 2-methylpentene-1 (I)  
PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 10, 1962,  
2319-2324  
TEXT: Propylene dimerized smoothly at 200 - 220°C, under  
100 - 120 atm, with  $AlEt_3$  dissolved in iso-octane as the catalyst,  
over a period of 1.5 hours, in nearly quantitative yields. The pro-  
duct, I, was dimerized at 50°C, 70%  $H_2SO_4$  as the catalyst, in 30 min  
(optimum conditions), in up to ~80% yields w.r.t. the weight of the  
starting material. The dimerization of I may also be carried out  
with  $H_3PO_3$  on kieselguhr as the catalyst, at 120 - 160°C, under 20  
atm pressure, the highest yield of the tetramer being ~50%. In  
both cases the conversions were practically quantitative, calculated  
on reacted I. When 40%  $H_2SO_4$  was used as the catalyst, I did not  
dimerize, but underwent a highly selective isomerization to 2-methyl-  
pentene-2 at 25 - 30°C, over a period of 2 hours. This reaction

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Some syntheses based on ...

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D204/D307

also proceeded readily in the presence of  $H_3PO_3$  on kieselguhr, at 120 - 140°C, under a pressure of 10 - 30 atm; the conversions being nearly quantitative in both cases. At 10 - 20°C, in the presence of  $H_2SO_4$  and water, I was hydrated to 2-methylpentanol-2, over 30 min, with a nearly 100% conversion. With  $CH_2O$ , I condensed at 50°C, in the presence of  $H_2SO_4$ , to give (in 80% yield) 3-methyl-3-n-propyl-dioxan-1,3, over 2 hours. I was also used to alkylate benzene, toluene and phenol, over  $H_2SO_4$ , at 10 - 15°C in good to excellent yields. The alkylation of toluene with I, over  $AlCl_3$ , was less effective. There are 3 figures and 1 table.

ASSOCIATION: Yaroslavskiy tekhnologicheskii institut i nauchno-issledovatel'skiy institut monomerov dlya Sk (Yaroslav Technological Institute and Scientific Research Institute of Monomers for Synthetic Rubber)

SUBMITTED: July 13, 1961

Card 2/2

S/204/63/003/001/003/013  
E075/E436

AUTHORS: Fel'dblyum, V.Sh., Komissarova, G.P., Myasnikova, L.D.,  
Kryukov, S.I., Farberov, M.I.

TITLE: The synthesis of isoprene from propylene. 1. Analysis  
of aluminium alkyls in the process of dimerization of  
propylene

PERIODICAL: Neftekhimiya, v.3, no.1, 1963, 13-19

TEXT: The aim of the work was to investigate the methods for the  
analysis of activity and composition of aluminium alkyls. The  
analysis consists of determining the ratio of the "active"  
aluminium in  $AlR_3$ , where R - an organic radical, to total Al.  
The methods used to determine the "active" Al were: 1) the indicator  
method of Razuvayev and Grayevskiy, 2) the Ziegler ammoniacal  
method, 3) the Tepenitsyna-Farberova oxidation-reduction method,  
4) decomposition of  $AlR_3$  with  $H_2O$  with the subsequent measurement  
of the evolved gas volume. The first two methods gave correct  
values of the activity but are tedious in operation. The authors  
improved the Ziegler method by using di- or trimethylamine in place  
of  $NH_3$ , which greatly decreased the analysis time. Examination of  
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The synthesis of isoprene ...

S/204/63/003/001/003/013  
E075/E436

$AlR_3$  used several times for the catalysis of the dimerization of propylene showed that the first portion of the higher hydrocarbons (byproducts) forming during the reaction attach themselves to Al, or displace a part of the lower alkyl groups in  $AlR_3$ . Thus  $AlR_3$  used several times as catalyst is a complex mixture of aluminium alkyls, the molecules of which contain propyl and isobutyl groups and at least one  $C_9 - C_{12}$  group. There are 2 figures and 2 tables.

ASSOCIATION: Nauchno-issledovatel'skiy institut monomerov dlya SK  
Yaroslavskiy tekhnologicheskii institut  
(Scientific Research Institute of Monomers for  
Synthetic Rubber, Yaroslavl Technological Institute)

SUBMITTED: June 9, 1962

Card 2/2

S/204/63/003/001/004/013  
E075/E436

AUTHORS: Fel'dblyum, V.Sh., Kryukov, S.I., Farberov, M.I.,  
Golovko, A.V., Tyuryayev, I.Ya., Pankov, A.G.

TITLE: The synthesis of isoprene from propylene  
2. Isomerization of 2-methylpentene-1 in the liquid  
phase in the presence of solid acidic catalysts

PERIODICAL: Neftekhimiya, v.3, no.1, 1963, 20-27

TEXT: The object of the work was to isomerize 91.4% wt. pure 2-methylpentene-1 in the liquid phase using silica-alumina, cation exchange resin KY-1 (KU-1), phosphoric acid-kieselguhr, alumina and silica gel as catalysts. All experiments were carried out at 100 and 150°C and at 75 to 125°C with KU-1 as catalyst. The isomerization is complicated by three secondary reactions, the main of which is the formation of dodecene (dimerization of isohexenes). A small amount of cracking gives amylenes (especially at the higher temperatures). There is also formation of small amounts of various isohexenes. Silica gel and alumina were the least active catalysts. With the remaining more active catalysts the velocity of the main and secondary reactions was much  
Card 1/3

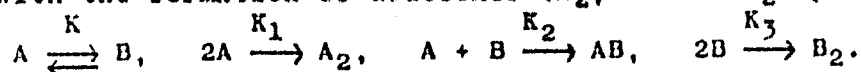
S/204/63/003/001/004/013

E075/E436

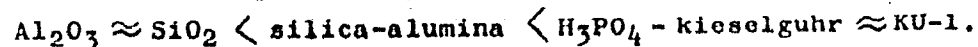
The synthesis of ...

higher, the increased temperatures favoring the formation of dodecene and decreasing the yield of 2-methylpentene-2.

Isomerization of 2-methylpentene-1 (A) to 2-methylpentene-2 (B) with the formation of dodecenes ( $A_2$ , AB and  $B_2$ ) proceeds as follows



The relative values of K and  $K_1$ ,  $K_2$ ,  $K_3$  depend on the proton acidity of the catalysts. Thus their effectiveness may be obtained from all these values. The catalysts were rated in the order of increasing activity:



The effectiveness of acidic sites increases in the order  $KU-1 < H_3PO_4 - \text{kieselguhr} < \text{silica-alumina}$ . Catalysts KU-1 and silica-alumina give about 80% conversion to 2-methylpentene-2 at 75 and 100°C respectively. There are 2 figures and 4 tables.

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The synthesis of ...

S/204/63/003/001/004/013  
E075/E436

ASSOCIATION: Nauchno-issledovatel'skiy institut monomerov dlya  
sinteticheskogo kauchuka Yaroslavskiy tekhnologicheskoy  
institut (Scientific Research Institute of Monomers  
for Synthetic Rubber, Yaroslav Technological  
Institute)

SUBMITTED: June 9, 1962

Card 3/3

FEL'DELYUM, V. Sh.; MYASNIKOVA, L.D.; KRYUKOV, S.I.; FARBEROV, M.I.

Synthesis of isoprene from propylene. Neftekhimiya 4 no.2:  
257-261 Mr-Apr'64 (MIRA 17:8)

1. Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo kauchuka, Yaroslavl' i Yaroslavskiy tekhnologicheskii institut.

FEL'DBYUM, V.Sh.; KRYZHEV, S.I.; FARBEROV, M.I.

Kinetics and the mechanism of acid-induced catalytic conversions  
of 2-methyl-1-pentene. Kin. i kat. 5 no.3:454-459 My-Je '64.

(MIRA 17:11)

1. Nauchno-issledovatel'skiy institut monomerov dlya sinteticheskogo  
kauchuka i Yaroslavskiy tekhnologicheskii institut.



Author:                     ,                     ;                     ,                     .

Liquid-phase oxidation of hexenes. Referred to: no. 7: 924-930  
1974-1975. (HWA 17:10)

1. Vsesoyuznyy tekhnologicheskii institut.

KRYUKOV, S.I.; KUT'IN, A.M.; KOMISSAROVA, G.P.; MYASHNIKOVA, L.D.; FARBEROV,  
H.I.

Dimerization of propylene by means of aluminum alkyls. Izv. vys.  
ucheb. zav.; khim. i khim. tekhn. 7 no.5:821-826 '64 (MIRA 18:1)

1. Yaroslavskiy tekhnologicheskii institut. Kafedra tekhnologii  
osnovnogo organicheskogo sinteza i sinteticheskogo kauchuka.

LEVIN, D.V.; KRYUKOV, S.M.

Preliminary results of aeromagnetic investigations of the  
Verkhoyansk fold zone, Lena-Anabar trough, and adjacent areas.  
Inform.biul. NIIGA no.13:65-69 '59. (MIRA 13:5)  
(Siberia--Magnetism, Terrestrial)

LEVIN, D.V.; KRYUKOV, S.M.

Tectonic divisions of the foundation of the Arctic portion of  
the West Siberian Plain based on aeromagnetic data. Trudy  
NIIGA 96:130-134 '59. (MIRA 13:5)  
(West Siberian Plain--Geology, Structural)

LEVIN, D.V.; KRYUKOV, S.M.

Field work results of the aeromagnetic expedition of 1959. Inform.  
biul.NIIGA no.18:53-58 '60. (MIRA 14:6)  
(Russian, Northern-Magnetic prospecting)

S/169/62/000/006/029/093  
D228/D304

AUTHORS: Karasik, A. M., Kryukov, S. M. and Levin, D. V.

TITLE: Preliminary results of an aeromagnetic survey in 1960

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 6, 1962, 29, abstract 6A216 (Inform. byul. In-ta geol. Arktiki, no. 22, 1960, 37-42)

TEXT: The results of an aeromagnetic survey over three areas in 1960 are described. The survey was fulfilled in order to study the abyssal structure of areas and expose intrusive bodies. Previously unknown local anomalies, related to intrusive bodies, were revealed. /-Abstracter's note: Complete translation.\_7 ✓

Card 1/1

KRYUKOV, S.M.; LEVIN, D.V.

Using three stations for recording the variations of a magnetic  
field. Trudy NIIGA 132:163-165 '62. (MIRA 16:4)  
(Arctic regions--Magnetism, Terrestrial)

KARASIK, A.M.; KRYUKOV, S.M.; LEVIN, D.V.; SHCHELOVANOV, V.G.

Low altitude factors in aerogamma-magnetic surveying. Trudy  
NIIGA 132:172-179 '62. (MIRA 16:4)  
(Prospecting--Geophysical methods)



LEVIN, D.V.; KRYUKOV, S.M.

Secular variations of elements in certain places of the central  
part of the Soviet North. Inform. sbor. NIIGA no.32:32-37 '62.  
(MIRA 16:12)

VOLK, V.E.; KRYUKOV, S.M.; LEVIN, D.W.

Basic characteristics of the subsurface structure in the western  
part of the Taymyr depression according to aeromagnetic data.  
Uch. zap. NIIGA. Reg.geol. no.3:107-128 1961.

(MIRA 18:10)

SARANIK, A.M.; KRYUKOV, S.M. [deceased]

Application of corrections for the variation from these stations  
in magnetic surveying. Izvest. profil. no.3:104-111 1965.  
(MIRA 1818)

LEVIN, D.V.; KRYUKOV, S.M.; VOLK, V.E.

Structure of the western part of the Khatanga depression  
according to aeromagnetic data. Uch. zap. NIIGA. Reg.  
geol. no.2:84-118 '64. (MIRA 19:1)

KRYUKOV, S. N.

Applied Mechanics Reviews  
June 1954  
Heat and Mass Transfer

1947. Kryukov, S. N., and Zhukovitsky, A. A. A method for determining diffusion coefficients. *Nat. Sci. Found. tr-71*, Sept. 1953; *Doklady Akad. Nauk SSSR (N.S.)* 60, 7, 379-382, May 1953.

Determination of coefficients for diffusion in solids can be simplified by using radioactive elements. Authors propose a method simpler than either (a) the method of removing layers, (b) the absorption method, or (c) the method of longitudinal sectioning. The proposed method is a modification of (b) so that the effects of absorption and reflection are nullified. Method is given as: "A layer of radioactive element is deposited on one side of a thin sample (30 to 100  $\mu$ ). Then, after diffusion annealing, the radioactivity of both sides of sample is determined as function of annealing time. The diffusion coefficient  $D$  is obtained from

$$\ln[(I_1 - I_2)/(I_1 + I_2)] = \ln K - \pi^2 Dt/l^2$$

where  $I_1$  is counting rate on one side,  $I_2$  rate on other side;  $K$  is a constant independent of time and of diffusion coefficient,  $l$  is the thickness of the sample, and  $t$  is time of annealing.

In order to reduce uncertainty in measuring activity arising from the geometrical factor, the sample should be removed a distance of 5 to 10 mm from the counter tube.

The method was tested with silver and found satisfactory.

D. Aronson, USA

KRYUKOV, S. N.; ZAKHAROV, E. K.; KIDIN, I. N.;

"The Examination of the Heterogeneity of Steel by its Carbon Distribution After High-Frequency Hardening,; in Book The Application of Radioisotopes in Metallurgy, Symposium XXXIV; Moscow; State Publishing House for Literature on Ferrous and Nonferrous Metallurgy, 1955.

I. N. KIDIN, Chair Metallography and Heat Treatment, Chair of Physical Chemistry, Moscow Inst. of Steel im I. V. Stalin; KRYUKOV, S. N.; ZAKHAROV, E. K. (Engr./ Chair of Metallography and Heat Treatment.

PPROVED FOR

KRYUKOV, S. N., ZHUKHOVITSKIY, A. A., and YANITSKAYA, M. E.,

"Self-Diffusion and Diffusion in Binary Solid Solutions." In book  
The Application of Radiolabels in Metallurgy. Symposium XXXIV; Moscow;  
State Publishing House for Literature on Ferrous and Nonferrous Metallurgy, 1955.

ZHUKHOVITSKIY, A. A. (Dr. Chem. Sci., Prof.) Chair of Physical Chemistry, Moscow Inst.  
of Steel in I. V. Stalin; Yanitskaya, M. E. (Ass't); Kryukov, S. N. (Ass't.)

KRYUKOV, S. N.: GEODAKYAN, V. A. (Engr.); ZHUKHOVITSKIY, A. A. (Prof., Dr. Chem. Sci.)

"The Measurement of Diffusion Coefficients," in book the Application of Radio-isotopes in Metallurgy, Symposium XXXIV; Moscow; State Publishing House for Literature on Ferrous and Nonferrous Metallurgy, 1955.

ZHUKOVITSKIY, A. A. (Prof., Dr. Chem. Sci.); KRYUKOV, S. N. (Ass.t.); GEODAKYAN, V. A. (Engr.), Chair Physical Chemistry, Moscow Inst. of Steel im I. V. Stalin.



"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920002-2

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920002-2"

Category : USSR/Solid State Physics - Diffusion. Sintering

E-6

Abs Jour : Ref Zhur - Fizika, No.1, 1957, No 1252

Author : Zhukhovitskiy, A.A., Kryukov, S.N., Yanitskaya, M.Ye.

Title : Self-Diffusion and Diffusion in Binary Solid Solutions

Orig Pub : Primeneniye radioaktivnykh izotopov v metallurgii, M., Metallurgizdat, 1955, sb. 34, 7-35

Abstract : The dependence of the self-diffusion coefficient on the concentration of the solution and its relationship to the coefficient of diffusion are examined within the framework of the method of the transition state for the "vacancy" mechanism and of the exchange state. An analysis is made of the relationship between the coefficient of self-diffusion in a solution and the coefficient of self-diffusion in a pure component and in an infinitely-dilute solution of this component in another component; the connection between the diffusion and thermodynamic characteristics of solutions is also analyzed. The thin-layer method is used to measure the concentration dependence of the coefficient of self-diffusion in the Ag-Au, Ag-Cu and Al-Sn systems and the activity coefficients are measured for the Ag-Au system by new methods, explained in the article. Analysis of the experimental data confirms the deduced existence of

Card : 1/2

Category : USSR/Solid State Physics - Diffusion. Sintering

E-6

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1252

two processes, which manifest themselves in the  $[\ln D \text{ vs. } (1/T)]$  curve as a discontinuity, similar to that caused by the boundary diffusion. The substantial effect of slight copper impurities on the coefficient of diffusion of silver illustrates the lack of adequate thermodynamic data on the solution.

Card : 2/2

"APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920002-2

APPROVED FOR RELEASE: 04/03/2001

CIA-RDP86-00513R000826920002-2"

ZHUKHOVITSKIY, A.A., professor, doktor khimicheskikh nauk; ~~KRYUKOV, S.V.~~  
kandidat tekhnicheskikh nauk; GEODAKYAN, V.A., inzhener.

Measuring diffusion coefficients. Sber.Inst.stali 34:102-114 '55.  
(MIRA 9:7)

1.Kafedra fizicheskey khimii.  
(Diffusion) (Radioactive tracers--Industrial applications)

✓ Diffusional method for determination of thermodynamic characteristics of solutions. A. A. Zhukhovitskiĭ, S. N. Kryukov, M. E. Yanitskaya, and A. G. Golitsyn (I. V. Staff, Moscow State Univ.). *Doklady Akad. Nauk S.S.S.R.* 102, 121-4 (1958).—The proposed method of detg. thermodynamic characteristics of a soln. is based on macroscopic observations, and is tentatively called the "diffusional method." The app. consists of 2 quartz tubes, one of them contg. the donor ( $\text{Ag}^{109}$ ) applied electrolytically to a 1:1 Au-Ag alloy and annealed. The acceptor, in point contact with the donor, was in the 2nd tube, and consisted of pure, nonradioactive Ag. The app. was kept in a tubular furnace at 900, 850, and  $800 \pm 0.6^\circ$ . The diffusion rate was detd. by measuring the activity of the acceptor every 30 min. The activity coeffs. calcd. agree well with values in the literature. W. M. Sternberg

(3)

AUTHORS: Zhukhovitskiy, A. A., Kryukov, S. N., Soldatov, Ye. A. SOV/32-24-9-15/53

TITLE: A Non-Isothermal Method for the Determination of Diffusion Properties (Neizotermicheskiy metod opredeleniya diffuzionnykh kharakteristik)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol 24, Nr 9, pp 1071-1074 (USSR)

ABSTRACT: If the determinations mentioned in the title are carried out by the isothermal method, a larger number of measurements is involved, and temperatures must be maintained strictly constant (by means of a thermostat). In non-isothermal measurements, these disadvantages can be avoided, and several processes can be observed. A description is given of the method mentioned in the title, as well as of a simple device (a line drawing of which is given) for non-isothermal annealing. After the solving of mathematical equations, it is stated that the method of thin layers had to be modified. From the description of the device and the technique employed it is apparent that the method was tested by the self-diffusion of silver, using the  $Ag^{110}$  isotope. Amongst others, a graphic method is suggested in the derivation of the calculation equations. All the results obtained are

Card 1/2

S07/32-24-9-15/53

A Non-Isothermal Method for the Determination of Diffusion Properties

given close to those in the literature, as, for example, those obtained by Johnson (Dzhonson) (Ref 3).

There are 3 figures and 3 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina (Moscow Steel Institute imeni I. V. Stalin)

Card 2/2



5(2), 21(8)

AUTHORS:

~~Kruzhov, S. N.~~, Bokshetyn, B. S., Degal'tseva, T. I.,  
Zhukhovitskiy, A. A. SOY/32-24-11-2/37

TITLE:

The Analysis of Compound Systems by the Method of  $\beta$ -Radiation Reflection (Analiz slozhnykh sistem metodom otrazheniya  $\beta$ -izlucheniya)

PERIODICAL:

Zavodskaya Laboratoriya, 1958, Vol 24, Nr 11, pp 1305-1308 (USSR)

ABSTRACT:

The discovery of Mueller (Myuller) (Ref 2), that the reflex effect is determined by the central charge does not prove to be true in a number of cases. In order to analyze ternary and more complex systems composed of components with various nuclear charges the method of  $\beta$ -radiation reflection was further developed. Measurement of the reflected radiation after it has passed through filters of various thicknesses is suggested by the authors. Using this method the three-component system Fe - Mo - W was analyzed, and the iron content of ores was determined. The iron-molybdenum-tungsten mixture was prepared from chemically pure powders of these elements. The measuring apparatus was previously described (Ref 3). Sr90 and Y90 mix-

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SOV/32-24-11-2/37

The Analysis of Compound Systems by the Method of  $\beta$ -Radiation Reflection

tures were used as radiation sources. Using a thin aluminum filter it was observed that the reflected  $\eta_2$  depends to a great extent upon the composition. With thicker filters the reflected  $\eta_1$  is determined only by molecules of moderate weight. A graphical determination based upon the reflection as a function of the iron content at a given molecular weight (thin aluminum filter, 0.15 mm) together with the results using a thicker aluminum filter make possible a determination of the composition of a mixture. Measurements on a series of ores and artificial mixtures (ordered from "Gikyzhruda") showed that the reflection through thin filters is insufficient as a basis for the analysis of ores. The values of  $\eta_1$  and  $\eta_2$  must first be determined, and then from the standard curve formed from the intersection of the  $\eta_2$  straight line with the straight line of the constant  $\eta_1$  the iron content can be determined.

There are 5 figures and 3 references, 2 of which are Soviet.

Card 2/3

The Analysis of Compound Systems by the Method of  $\beta$ -Radiation Reflection

SOV/32-24-11-2/37

ASSOCIATION: Moskovskiy institut stali im. I. V. Stalina (Moscow Steel  
Institute imeni I. V. Stalin)

Card 3/3

ACC NR: AP6027119

(A)

SOURCE CODE: UR/0018/66/000/005/0115/0116

AUTHOR: Kryukov, V. (Guards Lieutenant Colonel)

ORG: none

TITLE: Apparatus for training tankers

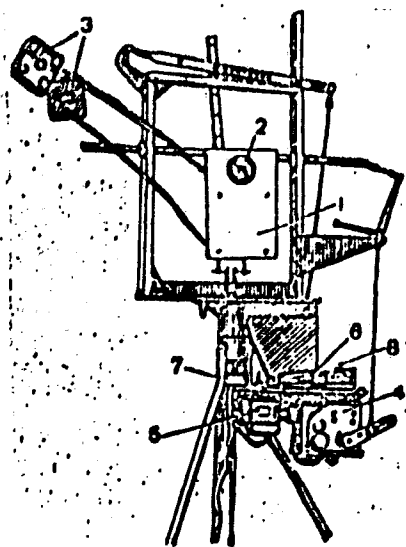
SOURCE: Voyennyy vestnik, no. 5, 1966, 115-116

TOPIC TAGS: military tank, military training, training aid, training procedure,  
*airborne training, gunnery training*

ABSTRACT: The apparatus, shown below, is an improved revolving mount with an electrified screen and an electromechanical drive. The screen (1), made of taxolite or vinyl plastic, is equipped with a contact system (2) consisting of four brass sectors. Each sector is connected by wire with an electric bulb which indicates deviations from the target. The central contact is connected by wire to the main bulb which indicates the target hits. The contacts are insulated by a gap or 1 mm and are fastened to the screen with bolts. The contact system is fed by direct voltage of 24 v. The bases (3) with the electric bulbs and target image are mounted on two poles which are bolted to the screen. The screen together with the target and electric bulbs are shifted horizontally and vertically with the aid of the electromechanical drive. The drive consists of a reducer (4), an electric motor (5), and a rheostat (6). A rosette (7) for connecting the feed of the electric motor is mounted on the upper

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ACC NR: AP6027119



shelf of the reducer. A control valve (8) screwed to the metal base of the rheostat is used for controlling the revolutions of the electric motor and, consequently, for changing the rate of the screen movement. This simple apparatus has been successfully for more than two years in training tankers to fire from a stationary position and a short halt, as well as on the move. Operating the elevating and traversing mechanism or the control board, the trainee points the sight marker to the center of the target and fires. The needle of the pointer locks the contact of the corresponding accuracy of fire, the electric bulb lights up, and the trainee besides acquiring experience with the elevating and traversing mechanism or control board also sees the results of his shooting. Orig. art. has: 1 figure.

Figure 1.

SUB CODE: 19,05/ SUBM DATE: none

Card 2/2

BELKIN, Yu.; KALINKIN, A.; KOZHATKIN, G.; LOBKO, P.; KRYUKOV, V.,  
red.

[Device for the dynamometry of mounted machines; results  
of comparative tests] Pribory dlia dinamometrirovaniia  
navesnykh mashin; rezul'taty sravnitel'nykh ispytani.ii.  
Moskva, Biuro tekhn. informatsii i reklamy, 1964. 103 p.  
(MIRA 18:9)

LAZAREV, A.A., inzh.; MITSYN, P.V., inzh.; NIKIFOROV, A.A., inzh.;  
ROZET, I.Ya., inzh.; KRYUKOV, V., red.; BALLOD, A., tekhn.  
red.

[Dismantling and assembling the S-100 tractor] Razborka i  
sborka traktora S-100. Moskva, Izd-vo sel'khoz. lit-ry,  
zhurnalov i plakatov, 1962. 231 p. (MIRA 15:4)

1. Chelyabinskiy traktorny zavod (for Lazarev, Mitsyn,  
Nikiforov, Rozet).

(Tractors--Maintenance and repair)

BELEN'KIY, I., inzh.; YESIMONTOVSKIY, M., inzh.; Prínimal uchastley: KRYUKOV, V.

Pressing with cold water in repairing tires. Avt.transp.  
40 no.11:26-28 N '62. (MIRA 15:12)  
(Tires, Rubber—Retreading and recapping)



1911. Ann. Agricult. Sci.

Dissertation: "On the Problem of Studying Vanadium, Manganese and other Microelements in Respect to Nourishment of Plants." All-Union Sci Res Inst of Fertilizers, Agricultural Engineering and Soil Science imeni K.K. Gedroyets, 4 Feb 47.

SO: Vechernyaya Moskva, Feb, 1947 (Project #17836)

KRYUKOV, V.A.

Cement-lime putty. Transp. stroi. 15 no.9:51 S '65.

(MIRA 18:11)

1. Brigadir malyarov tresta Omsktransstroy.

ZYULIKOV, G.M., kand. tekhn. nauk; LOVTSOVA, Ya.S., kand. tekhn. nauk;  
NECHAYEV, Ye.N., inzh.; KRYUKOV, V.A., inzh.; FONIN, V.M., inzh.

Construction of polyethylene pressure pipes in irrigation.  
Gidr. i mel. 17 no.10:43-51 O '65. (MIRA 18:10)

KRYUKOV, V.B.

Replacement dikes in the region of the Abukanskoye iron ore and  
Kharadshul'skoye copper-cobalt deposits. Dokl. AN SSSR 159  
no.2:340-343 N '64. (MIRA 17:12)

1. Predstavleno akademikom D.S. Korzhinskim.